

*Sub  
Com*

means for emitting laser beams, comprising at least three light emitting points arranged at an equal interval and for emitting laser beams to form corresponding laser beam spots on the means for recording at a minimum recording interval,

wherein the at least three laser beams scan the means for recording in a main scanning direction to form a light image having the minimum recording interval on the means for recording,

the equal interval is not greater than the minimum recording interval, and

one of the at least three laser beams is configured to be used as a clock laser beam to determine a starting time for each scanning.

31. (New) A multi-beam scanning device comprising:

a light beam emitting array comprising at least three light emitting elements, which are arranged at predetermined locations and which emit respective laser beams to form corresponding laser beam spots on a recording medium at a minimum recording interval,

wherein the three or more laser beams scan the recording medium in a main scanning direction to form a light image having the minimum recording interval on the recording medium, and

wherein one of the at least three laser beams is configured to be used as a clock laser beam to determine a starting time for each scanning.

#### REMARKS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1, 3-6, 8-11, 13-16, and 18-31 are pending; Claims 2, 7, 12, and 17 have been cancelled; and Claims 27-31 have been newly added. No claims have been amended

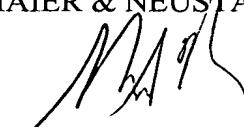
herewith. Support for new Claims 27-31 may be found, for example, at pages 3-5 of the specification. Accordingly, it is respectfully submitted that no new matter has been added by this amendment.

Applicant thanks Examiner Pham for the interview granted Applicant's representatives on January 10, 2003. During the interview, Claims 1, 2, and new Claims 27-31 were discussed. During the interview, it was agreed that the reference to Asada (U.S. Pat. No. 6,222,611) may not be used against the present application for a 35 U.S.C. § 103 rejection, as both the present application and the Asada reference are commonly assigned to Ricoh Company, Ltd. See assignment recorded at Reel 011656, Frame 0576. It was further agreed that the pending claims patentably distinguish over the remaining references of record.

Consequently, in view of the foregoing discussion, it is respectfully submitted that the pending application is in condition for immediate allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Gregory J. Maier  
Registration No. 25,599  
Robert T. Pous  
Registration No. 29,099  
Attorneys of Record



22850

Tel.: (703) 413-3000

Fax: (703) 413-2220

GJM:RTP/KDP/kst/dmr

I:\ATTY\KDP\20's\204398US\204398 REVISED RESP.DOC

**Marked-Up Copy**  
Serial No: 09/820,933  
Amendment Filed on: *3-3-03*

IN THE SPECIFICATION

At page 13, lines 8-15, please delete the paragraph in its entirety and substitute therefor:<sup>2</sup>

--Namely, by adjusting the optical axis of the collimator lens 5 so as to be on substantially the center of a hole 2c formed in the engaging section 2a of the holder 2, the optical axis of the collimator lens 5 can be set so as to be located at the center of the light emitting points 1a<sub>1</sub> to 1a<sub>4</sub> (i.e., the center between 1a<sub>2</sub> and 1a<sub>3</sub>) of the laser diode array 1. [He]  
The optical axis is in particular parallel to the direction of light emission 15 of the light emitting elements (e.g., laser diodes).--

Page 13, lines 20-25, please delete the paragraph in its entirety and substitute therefor:

--When the subassembly 10 is fixed on the bracket 7, at first the engaging section 2a of the holder 2 is inserted in an engaging hole 7a formed on [substantial] substantially the center of the bracket 7 such that the engaging section 2a can rotate in a direction indicated by an arrow E. Then the subassembly 10 is fixed to the bracket 7 by screwing screws 9 to holes 2d.--

---

<sup>2</sup> A marked-up copy of the specification is attached hereto.

IN THE CLAIMS

--1. (Twice Amended) A multi-beam scanning device comprising:

a laser diode array having at least three light emitting points arranged in a package at an equal interval and configured to emit respective laser beams that form corresponding laser beam spots on a recording medium at a minimum recording interval, wherein

the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval in the recording medium,

the equal interval is not greater than the minimum recording interval, [and]

the at least three light emitting points are arranged such that the corresponding laser beams spots on the recording medium are arranged substantially in a line in a direction orthogonal to the main scanning direction, and

wherein any one of the laser beams is used as a clock laser beam configured to determine a timing of starting each main scanning.

2. (Cancelled).

3. (Amended) The multi-beam scanning device according to Claim [2] 1, further comprising:

an abnormal lighting detector configured to detect abnormal lighting of the one of the at least three light emitting points configured to emit the clock laser beam; and

a laser beam changer configured to change the clock laser beam to any one of the laser beams emitted by the other light emitting points normally emitting a laser beam, when the abnormal lighting detector detects abnormal lighting.

6. (Twice Amended) An image forming apparatus comprising:

a recording medium; and

a laser diode array having at least three light emitting points arranged in a package at an equal interval and configured to emit respective laser beams that form corresponding laser beam spots on the recording medium at a minimum recording interval, wherein

the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the recording medium,

the equal interval is not greater than the minimum recording interval, [and]

the at least three light emitting points are arranged such that the corresponding laser beam spots on the recording medium are arranged substantially in a line in a direction orthogonal to the main scanning direction, and

wherein any one of the three or more laser beams is used as a clock laser beam  
configured to determine a timing of starting each main scanning.

7. (Cancelled).

8. (Amended) The image forming apparatus according to Claim[7] 6, further comprising:

an abnormal lighting detector configured to detect abnormal lighting of one of the at least three light emitting points configured to emit the clock laser beam; and

a laser beam changer configured to change the clock laser beam to any one of the laser beams emitted by the other light emitting points normally emitting a laser beam, when the abnormal lighting detector detects abnormal lighting.

11. (Twice Amended) A multi-beam scanning device comprising:

a laser emitting means for emitting laser beams, comprising at least three light emitting points arranged in a package at an equal interval and configured to emit the at least three laser beams to form corresponding laser beam spots on a recording medium at a minimum recording interval,

wherein the laser beams from the at least three light emitting points scan the recording medium in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the recording medium,

the equal interval is not greater than the minimum recording interval, [and]

the at least three light emitting points are arranged such that the corresponding laser beam spots on the recording medium are arranged substantially in a line in a direction orthogonal to the main scanning direction, and

any one of the laser beams is used as a clock laser beam configured to determine a timing of starting each main scanning.

12. (Cancelled).

13. (Amended) The multi-beam scanning device according to Claim [12] 11, further comprising:

an abnormal lighting detection means for detecting abnormal lighting of one of the at least three light emitting points configured to emit the clock laser beam; and

a laser beam changing means for changing the clock laser beam to any one of the laser beams emitted by the other three light emitting points normally emitting a laser beam, when the abnormal lighting detection means detects abnormal lighting.

16. (Twice Amended) An image forming apparatus comprising:

means for recording data thereon; and

means for emitting laser beams, comprising at least three light emitting points arranged in a package at an equal interval and for emitting laser beams to form corresponding laser beam spots on the means for recording at a minimum recording interval,

wherein the laser beams scan the means for recording in a main scanning direction while being at least one of on and off so as to form a light image having the minimum recording interval on the means for recording,

the equal interval is not greater than the minimum recording interval, [and]  
the at least three light emitting points are arranged such that the corresponding laser  
beam spots on the means for recording are arranged substantially in a line in a direction  
orthogonal to the main scanning direction, and  
any one of the laser beams from the at least three light emitting points is used as a  
clock laser beam for determining a time to start each main scanning.

17. (Cancelled).

18. (Amended) The image forming apparatus according to Claim [17] 16, further  
comprising:

means for detecting abnormal lighting of the at least three light emitting points that is  
used to emit the clock laser beam; and

means for changing the clock laser beam to any one of the laser beams emitted by the  
other three light emitting points, when the means for detecting abnormal lighting detects an  
abnormal lighting condition.

21. (Twice Amended) A multi-beam scanning device comprising:

a light beam emitting array comprising three or more light emitting elements, which  
are arranged at predetermined locations and which emit respective laser beams to form  
corresponding laser beam spots on a recording medium at a minimum recording interval,

wherein the three or more laser beams scan the recording medium in a main scanning  
direction while being put on or off to form a light image having the minimum recording  
interval on the recording medium,

wherein the three or more light emitting elements are arranged such that the  
corresponding laser beam spots on the recording medium are arranged substantially in a line  
in a direction orthogonal to the main scanning direction, and

any one of the laser beams from the at least three light emitting points is used as a  
clock laser beam for determining a time to start each main scanning.

Claims 27-31 (New).--